AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for generating mid and long wavelength infrared radiation, comprising the step of:

pumping a tunable optical parametric oscillator with the output of a sufficiently narrow line width to enable production of the mid and long wavelengths, said line width being less than 5 nanometers.

2. (Original) The method of Claim 1, wherein the pumping step includes the use of a pumping optical parametric oscillator.

3. (Original) The method of Claim 2, wherein the pumping optical parametric oscillator is non-colinearly phase matched.

4. (Original) The method of Claim 3, and further including the step of pumping the pumping optical parametric oscillator with a narrow line width source of pumping energy.

5. (Cancel)

6. (Original) The method of Claim 4, and further including the step of seeding the pumping energy with energy corresponding in wavelength to one of the wavelengths at which the pumping optical parametric oscillator lases.

7. (Original) The method of Claim 6, wherein the one wavelength is that associated with the signal of the pumping optical parametric oscillator.

8. (Currently amended) The method of Claim 1, wherein the output that pumps the tunable optical parametric oscillator ~~is pumpable with~~ includes 5 micron energy.

9. (Original) The method of Claim 8, wherein the line width of the 5 micron energy that pumps the tunable optical parametric oscillator is less than 5 nanometers.

10. (Original) The method of Claim 1, wherein the tunable optical parametric oscillator is tunable between 5 and 20 microns.

11. (Currently amended) A method of providing sufficient pumping energy to pump a tunable optical parametric oscillator so that it is tunable to produce an output between 5 and 20 microns, comprising the step of:

pumping the tunable optical parametric oscillator with an output from a pumping optical parametric oscillator that is non-colinearly phase matched and is pumped with seeded pumping energy, the output of the pumping optical parametric oscillator being of ~~sufficiently narrow~~ a line width less than 5 nonometers to effectively pump the tunable optical parametric oscillator.

12. (Cancel)

13. (Original) The method of Claim 11, wherein the tunable optical parametric oscillator includes a $CdGeAs_2$ nonlinear crystal, wherein the pumping optical parametric oscillator includes a ZGP nonlinear crystal, and wherein the seeding pumping energy is from an HeNe 3.39 micron source.

14. (Currently amended) A system for generating coherent infrared energy in a band from 5-20 microns, comprising:

a tunable optical parametric oscillator having an output tunable from 5-20 microns; and,

A pumping optical parametric oscillator having an output beam coupled to said tunable optical parametric oscillator and of a ~~sufficiently narrow~~ line width less than 5 nanometers to effectively pump said tunable optical parametric oscillator.

15. (Original) The system of Claim 14, wherein said pumping optical parametric oscillator is non-colinearly phase matched.

16. (Original) The system of Claim 15, and further including a seeded pumping source for said pumping optical parametric oscillator.

17. (Currently amended) The system of Claim 16, wherein said tunable optical parametric oscillator includes a $CdGeAs_2$ nonlinear crystal ~~pumpable at 5 microns~~ and wherein said pumping optical parametric oscillator includes a ZGP nonlinear crystal~~, the output beam of said pumping optical parametric oscillator having a line width less than 5 nanometers~~.

18. (Original) The system of Claim 71, wherein said seeded pumping source includes a HeNe laser.

19. (Original) The system of Claim 18, wherein said seeded pumping source includes a Ho:YLF laser.

20. (New) A method for generating mid and long wavelength infrared radiation, comprising the step of:

pumping a tunable optical parametric oscillator with the pumping energy from a pumping optical parametric oscillator having an output of a sufficiently narrow line width to enable production of the mid and long wavelengths, the narrow line width established by seeding the pumping energy with energy corresponding in wavelength to one of the wavelengths at which the pumping optical parametric oscillator lases.

21. (New) The method of Claim 20, wherein the pumping step includes the use of a pumping optical parametric oscillator.

22. (New) The method of Claim 21, wherein the pumping optical parametric oscillator is non-colinearly phase matched.

23. (New) The method of Claim 22, and further including the step of pumping the pumping optical parametric oscillator with a narrow line width source of pumping energy.

24. (New) The method of Claim 23, wherein the line width of the source of pumping energy is less than 5 nanometers.

25. (New) The method of Claim 20, wherein the one wavelength is that associated with the signal of the pumping optical parametric oscillator.

26. (New) The method of Claim 20, wherein the tunable optical parametric oscillator is pumpable with 5-micron energy.

27. (New) The method of Claim 26, wherein the line width of the 5 micron energy that pumps the tunable optical parametric oscillator is less than 5 nanometers.

28. (New) The method of Claim 20, wherein the tunable optical parametric oscillator is tunable between 5 and 20 microns.